

***Platypus rugulosus* (Platypodidae) and *Xyleborus ferrugineus*
(Scolytidae) and Certain Diseases of Coconut Palms in
Puerto Rico¹**

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Abstract: Adult males of *Platypus rugulosus* Chapuis and adult females of *Xyleborus ferrugineus* (Fabr.) were found in the trunks of stem bleeding diseased coconut palms (*Cocos nucifera* L.) at Dorado Beach, Puerto Rico. The stem bleeding disease organism, *Ceratocystis paradoxa*, was recovered from the tissues of affected palms. The role of *P. rugulosus*, common on the island, and of the very rare *X. ferrugineus* in the decline of palms is obscure. Bud rot caused *Phytophthora palmivora* as well as water logged soil were also found to be affecting palms of various ages at the same location.

In December 1971, at the request of Dorado Beach Estate's horticulturist Roy G. Thomas, an inspection was made of dying coconut palms on the north shore of Puerto Rico approximately 28 miles west of San Juan. A comparison of records and detailed horticultural maps, which indicated the location of individual palms on the estate, showed that during the preceding years many palms had died and been replaced with mature palms at considerable expense. Since on several other Caribbean islands, and mainly on Jamaica, the highly contagious and devastating lethal yellowing disease has recently been found associated with mycoplasmalike organisms (6), the dying of coconut palms was of concern not only to the estate owners but also to others.

Preliminary observations indicated that the dying palms showed none of the typical signs of lethal yellowing disease. Neither did they resemble any of the diseased coconut palms affected by diseases of uncertain etiology, described in 1964 from different areas of the tropics (2). *Phytophthora palmivora* was isolated from the partly affected bud tissues of several young palms showing early symptoms of bud rot.

Other palms with small leaves and thin tapering trunks were found growing on water-drenched areas and many roots were visible on the soil surface. It was first thought that the soil might contain high amounts of mineral salts, but the results of conductivity tests indicated that the salt content was normal. The pH of soil from the root area of these palms was also found to be normal (6.05).

In other cases numerous brown to reddish spots were observed on the trunks

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of affected, as well as of dead, palms. It was observed that where the outer reddish coloration was most intense, there were small tunnels leading inside the trunk. Small beetles were found within the tunnels. Several adult males of *Platypus rugulosus* Chapuis (Platypodidae) and adult females of *Xyleborus ferrugineus* (Fabr.) (Scolytidae) were the only inhabitants of the freshly bored tunnels.⁴

Trunk tissues of palms with the outer reddish coloration were sectioned longitudinally and transversely. Brownish red to dark brown coloration and partial to total decay of inner areas of the stem were characteristically associated with the bleeding palms. Small sections of tissue from interior areas of the trunk were surface sterilized and plated in various media. The fungus *Ceratocystis paradoxa* was isolated in every case. Partially invaded tissues also yielded the organism. Both the perfect as well as the imperfect stage (*Thielaviopsis paradoxa*) of the fungus were recovered from the inner tissues of the affected palms. The outer reddish discoloration, the interior symptoms of the malady, and the consistent isolation of *C. paradoxa* from infected material indicated that one of the most important diseases of palms in the Dorado Estate is stem bleeding. This malady has been described in various parts of the world and accepted to be caused by *C. paradoxa* (5).

It is known that beetles from the families Scolytidae and Platypodidae may attack weakened or diseased trees or plants, but these insects do not usually attack healthy trees. Most adult beetles are known to feed on the bark of trees while their larvae live in specially built galleries and feed on the mycelia of diverse ascomycetes (on the so-called ambrosia). The spores of the fungi are introduced in the galleries through the digestive tract of adult females. Whether the infestation at Dorado Beach Estates was an exception in which healthy trees were attacked is not possible to say at this time but instances of such occurrences have sometimes been known.

Apate monachus Fabricius, a bostrichid, is a common insect in Puerto Rico where it normally breeds in logs and dying trees. However, it came to be known as the "coffee tree borer" since it will attack living as well as dead coffee trees when population levels are high. This beetle has also been shown to attack many other tree species including mahogany, avocado, and tamarind (3, 4). Instances of similar behavior have been recorded locally in the case of certain buprestids and cerambycids.

In Puerto Rico, coconut palms as well as sugarcane stalks, coffee, trees of the genus *Inga*, and trees of the genus *Albizia* have been attacked by other species of scolytids. In addition, many species of forest trees, guava fruits

⁴ The identification of the two species was made by Dr. D. M. Anderson of the Insect Identification and Parasites Introduction Research Branch (now defunct), U.S. Department of Agriculture, ARS, Beltsville, Md., to whom the authors are indebted for his prompt assistance.

(*Psidium guajava*), oranges, and *Crotalaria* pods have been infested. However, *X. ferrugineus* is very rare in Puerto Rico and it has not been reported for over 85 years (1). *P. rugulosus*, on the other hand, is common in Puerto Rico. It has a very wide geographic distribution, i.e., from Baja California, to Argentina.

Research is under way to ascertain whether adults or larvae of the two species encountered can attack healthy palms and spread the causal agent of the stem bleeding disease.

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